CENTRE D'ÉTUDE SUR L'ÉVALUATION DE LA PROTECTION DANS LE DOMAINE NUCLÉAIRE

CORPORE: a Tool for Interpreting Whole Body Monitoring Results

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Session TS10b: *Existing exposure situations due to accidental contamination and nuclear legacy - long term management and remediation*

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Questions and worries of exposed people

- Different cultures – Same questions and worries

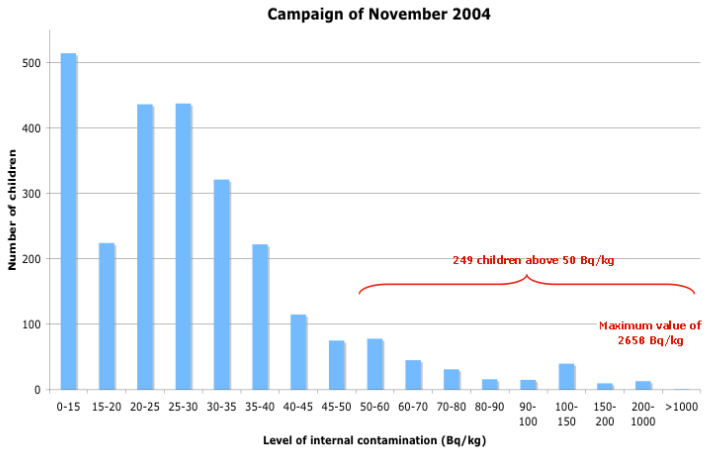
- In Belarus: people living in the vicinity of the Chernobyl exclusion zone

- In Norway: Sami people affected by Chernobyl consequences on the reindeer breeding

- In Japan: people living in non-evacuated areas after the Fukushima accident

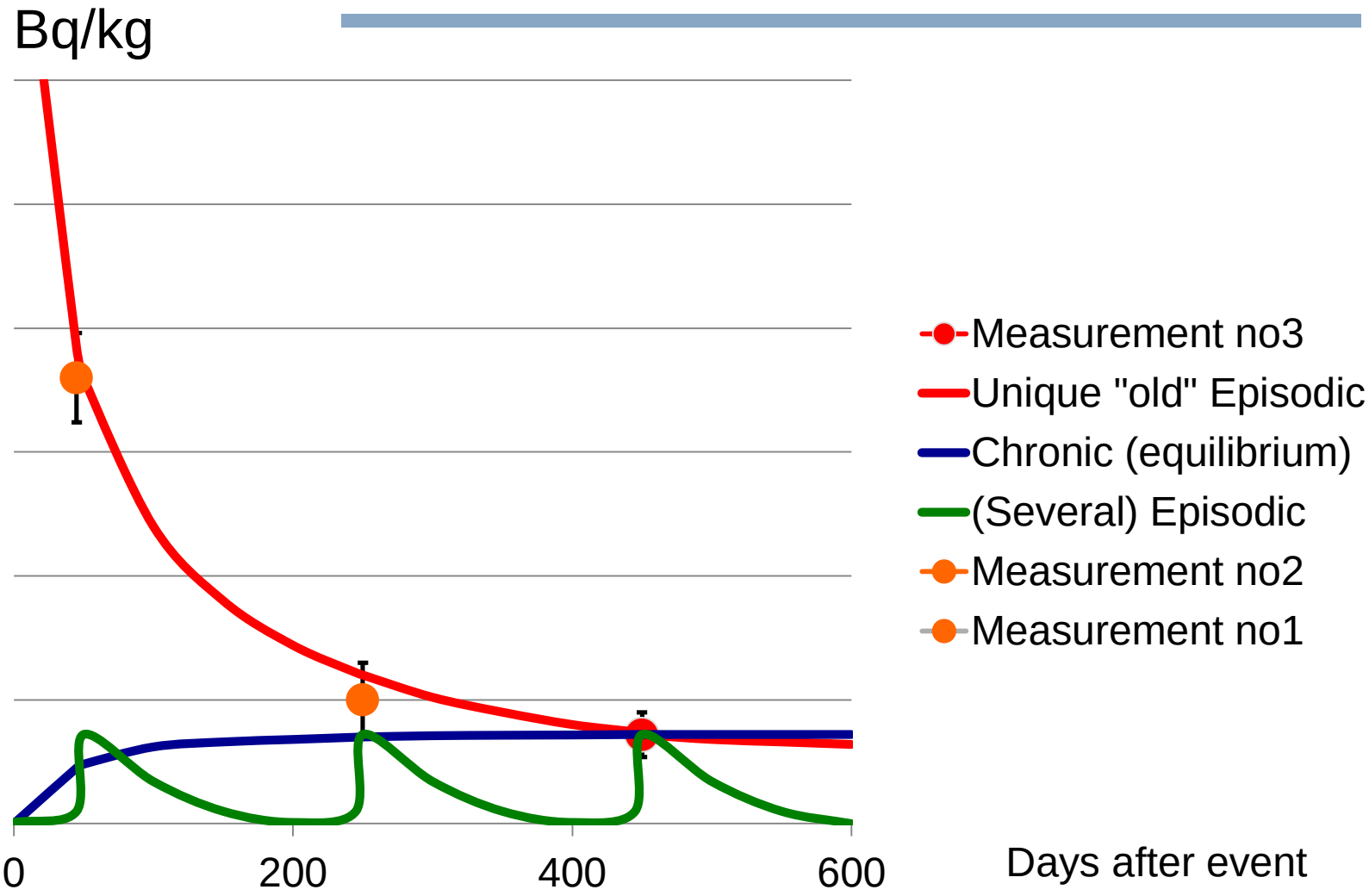
Questions and worries of exposed people (2)

- *Am I contaminated? What is the dose? When and where am I exposed? Is it harmful? Why are my children more contaminated than their friends? What can I do to improve the situation?*



- Local ‘experts’ (e.g. medical doctors) cannot answer to individual concerns; they don’t have tools for interpreting WBC measurements; it generates a feeling of helplessness and a loss of trust

Compatibility of contamination profiles with WBC measurements



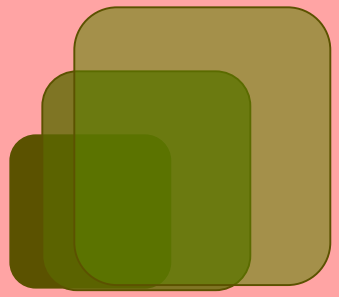
What is the dose received?

- **The ‘experts’ do not know!**

Episodic ‘small’ contamination(s)?

How many?

When?



Unique « old » and high contamination?

Error up to a factor of 100!

Chronic (daily) contamination?

Is it acceptable with regard to the reference levels?
0.1 mSv ≠ 10 mSv !

How to reduce uncertainties? (1)

- By increasing the frequency of measurements
  - Expensive
  - Intrusive
  - Scarcity of measurement resources

Age of the exposed person	Number of (Cs-137) WBC measurements needed to reduce the possible error on effective dose (by less than a factor of 3)
5 years old	**12 /year**
10 years old	6 /year
15 years old	3 /year
Adult	**> 2 /year**

How to reduce uncertainties? (2)

- By establishing a dialogue with the exposed people during the measurement
  - to better know the **individual profiles** of internal contamination
  - to improve the radiological protection culture within families (identification of self-help protection actions)

- Specific diets of the family members
- Hobbies and episodic behaviours
- Life places
- Contamination levels of local food products

CORPORE 1st module

Name	Gender	Bir
Child n°1	Man	01/12/200

Measures

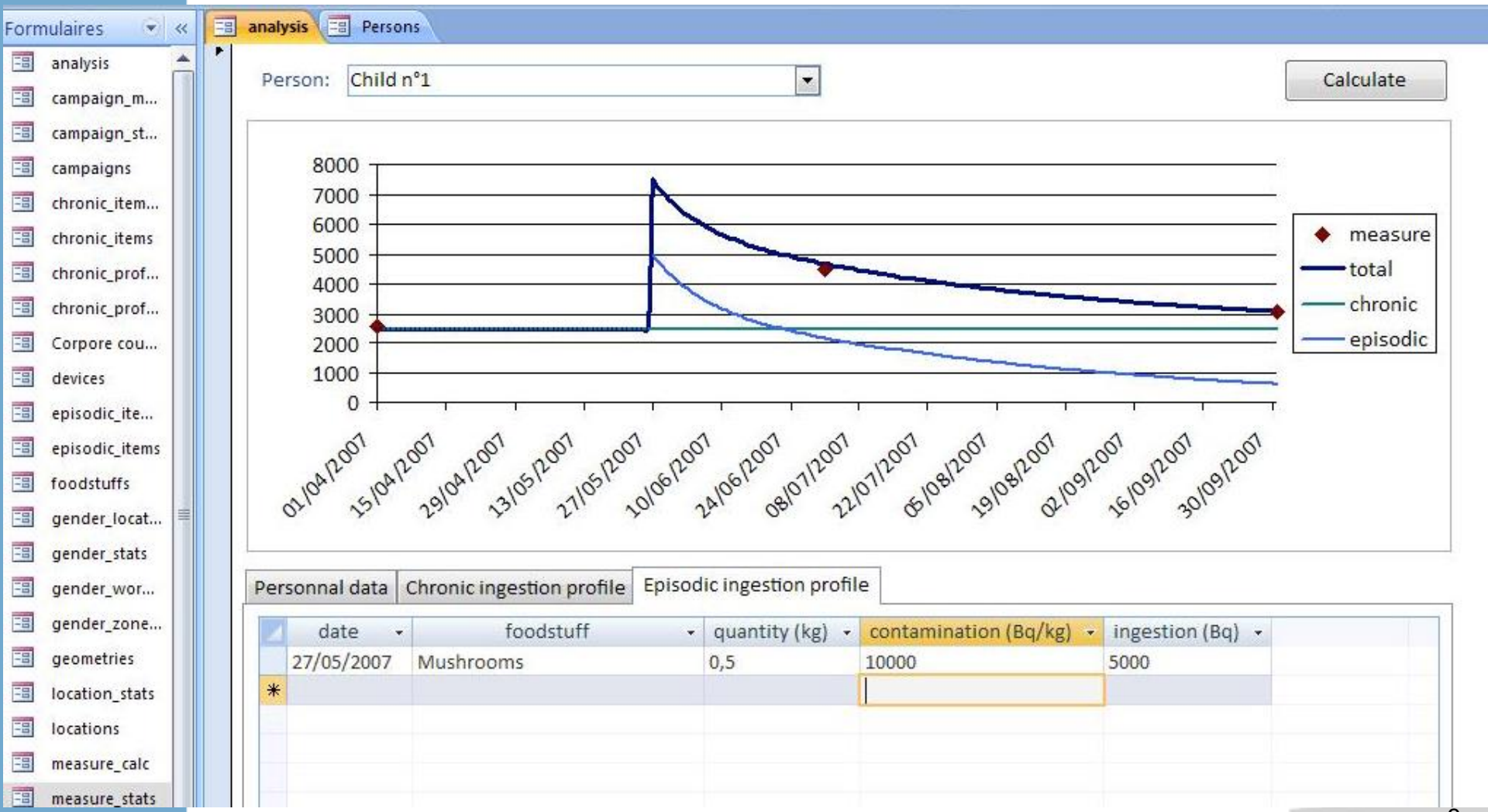
	date	weight	activity in Bq	in Bq/Kq		in Bq/day
▶	01/04/2007	25	2590	103,60		
	01/07/2007	25	4500	180,00	-	48,91
	01/10/2007	25	3050	122,00	-	16,58
*						

Campaign | Gender | Living place | Gender in living place | Working place | Gender in working place | Zone | Gender in Zone

Campaign statistics:

	in Bq/Kg		Avg	32,53
Min	0,40			181,25 Max
Min	0,03			60,87 Max
	in Bq/day		Avg	7,11

CORPORE 2nd module



Conclusion and Perspectives

- From the prototype to a software
- Toward an Expert System?
  - Design of self help protection actions
  - Strategy of health surveillance
  - Training of local professionals
  - Epidemiological studies (database)
- Development of CORPORE in Japan